



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
[www.uspto.gov](http://www.uspto.gov)

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/840,178  | 04/24/2001  | Toshifumi Nagaiwa    | 206342US2           | 2640             |
| 22850   | 7590        | 02/25/2003           |                     | EXAMINER         |
| OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.<br>1940 DUKE STREET<br>ALEXANDRIA, VA 22314 |             |                      | KACKAR, RAM N       |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 1763                |                  |

DATE MAILED: 02/25/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                          |                     |
|------------------------------|--------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b>   | <b>Applicant(s)</b> |
|                              | 09/840,178               | NAGAIWA ET AL.      |
|                              | Examiner<br>Ram N Kackar | Art Unit<br>1763    |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 10 February 2003.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,3,5,6,9,12,14,17,19-21 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 5,6,12,17,21 and 25-28 is/are allowed.
- 6) Claim(s) 1,3,9,14,19 and 20 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 9/25/02 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
 a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)      4) Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)      5) Notice of Informal Patent Application (PTO-152)  
 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.      6) Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

Claims 1,3, 9,14,19 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In this instance in the limitation “focus ring consisting essentially of a conductive material” it is not clear if the conductivity is meant to be electrical or thermal. The specification on page 2 line 9 refers to it as being conductive or insulating material, while at page 11 line 4 refers it to be made of a conductive material such as silicon or silicon carbide.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 14 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nozawa Toshihisa et al (JP 07310187).

Nozawa et al disclose a process chamber for semiconductor process, means for process gas, vacuum and for exciting plasma (Fig 1), a work table device comprising an electrostatic chuck having passage for cooling (Fig 1 and paragraph 7), a main surface (Fig 1 and abstract) for substrate and a sub-surface for a focus ring (Abstract), cooling mechanism for both main surface and sub surface (Paragraph 4-11) and a thermally conductive heat transfer medium for focus ring (Paragraph 10), a bolt which is equivalent to a clamp configured to press the focus ring against

the sub surface (Fig 2-23), material of focus ring being ceramic (Para 02) whose conductivity could be adjusted (Para 05), where the cooling means maintains the substrate and the focus ring at the same temperature (Paragraph 10).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nozawa Toshihisa et al (JP 07310187) in view of Faretra (US Patent Nr 4282924).

Nozawa et al do not explicitly disclose that the heat transfer medium for focus ring is a solid material.

Faretra discloses use of thermally conductive silicon rubber as a heat transfer medium (Col 3 line 35-36, line 63-68 and Col 4 line 1-2).

Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to use a good thermal transfer medium like silicon rubber to have good thermal conductivity between focus ring and the main surface.

5. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nozawa Toshihisa et al (JP 07310187) in view of Shahvandi et al (US Patent Nr 5405491).

Nozawa et al disclose the need to press focus ring on to subsurface but do not disclose a clamp frame.

Shahvandi et al disclose a clamp mechanism for clamping flat horizontal objects from above and an extending portion extending downward and fixed to a fixing member (Fig 3-42), made substantially of ceramic (Fig 3 – 40 and Fig 4-46).

Therefore it would have been obvious to one having ordinary skill in the art the time invention was made to use a clamp of the type disclosed by Shahvandi et al for pressing the focus ring on to sub-surface for good thermal contact and efficient cooling.

***Allowable Subject Matter***

Claims 5, 6, 12, 17, 21 and 25-28 have become allowable after amending previously indicated dependent claims in to independent form.

***Response to Amendment***

Applicants arguments filed on 2/10/2003 and 1/14/2003 have been considered but not found to be persuasive.

Applicant's assertion that the focus ring of Nozawa Toshihisa et al is an insulator is not agreed. Nozawa has not stated that the protection plate (focus ring) is an insulator. Rather, it has stated that it could be ceramic and its conductivity could be adjusted. Absent any claimed range of electrical or thermal conductivity, Nozawa properly reads on the claim.

Applicant has also stated that Nozawa makes no suggestion that a thermally conductive silicon carbide (a ceramic) focus ring would be used in the disclosed system. Nozawa has stated

that the focus ring could be ceramic and inherently thermally conductive if it needs to be cooled all over.

Applicant's argument regarding Shahvandi et al is also not agreed. Shahvandi has provided teaching for clamping flat objects to each other for good contact in a simple, convenient and economical way. Motivation to combine comes from the teaching itself (Col 5 lines 34-40)

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK  
February 22, 2003.

*mr tr*  
BENJAMIN L. UTECH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700